

# Rhodora

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# Rhodora

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## STATICE IN NORTH AMERICA.

S. F. BLAKE.

LIKE its near relative *Limonium*, the genus *Statice*<sup>1</sup> (*Armeria* Willd.) is one of which the taxonomic treatment has been subject to great diversity of opinion, Boissier in 1848 having enumerated fifty-two species, all of which Otto Kuntze in 1891 proposed to reduce to one. The several pre-linnaean species were lumped by Linnaeus in the *Species Plantarum* into one, *Statice Armeria*, the diagnosis of which ("scapo simplice capitato, foliis linearibus") might even today almost be taken as a generic character. Miller in 1768 and Link in 1801 recognized several European species, and Willdenow in 1809 had nine species of the genus.

In 1814 Pursh<sup>2</sup> recorded *Statice Armeria* as growing "on rocks near the sea-shore: Pennsylvania to Virginia. July, Aug. v. v." Torrey<sup>3</sup> soon after remarked that Pursh had "made some mistake respecting the habitat, as there is no 'sea-shore' to Pennsylvania," and, as Pursh never visited any region in America where the Thrift grows as a native, it is clear that his "v[idi] v[ivam]" was based either on some misapprehension or on garden specimens, perhaps escaped. The species was rightly noted by Gray<sup>4</sup> in the first edition of the *Manual*

<sup>1</sup> The reason for the use of *Statice* L. emend. Mill. in place of *Armeria*, already explained in my revision of American *Limonium* in *Rhodora* xviii. 55-56 (1916), may be repeated here. Linnaeus's *Statice* included the two groups, but he expressly noted the distinctions of *Statice* and *Limonium* in his observations under the genus, and this action must be taken as indicating the species with rounded heads as the typical group of the genus, and hence as that one for which the name must be retained, in accordance with Article 45 of the International Rules.

<sup>2</sup> Fl. Am. Sept. i. 212 (1814).

<sup>3</sup> Fl. N. & Mid. U. S. i. 329 (1824).

<sup>4</sup> Man. ed. 1. 280 (1848).



as "a native of Northern Canada . . . but not of the United States," and Pursh's error has in this case not caused the confusion that has resulted from some of his other doubtful records.

The first really satisfactory exposition of the species of *Statice* (*Armeria*) was made by the keen botanist Wallroth<sup>1</sup> in 1844. Its species, of which twenty-seven were recognized, were divided by him into three sections based on the pubescence of the fruiting calyx: *Mastrucatae*, with calyx-tube pubescent between as well as on the ribs; *Barbatae*, with calyx-tube pubescent only on the ribs; and *Calvae*, with tube glabrous. The first two sections were each subdivided according to the nature of the attachment between calyx and pedicel into two groups — *Rostellatae*, with the base of the calyx drawn out into a subacicular beak, and *Truncatae*, in which the point of attachment of the calyx was much shorter, and the calyx-base consequently less prolonged. The American species recognized were three, all described as new: *Armeria labradorica*, the only eastern species, of the *Mastrucatae Truncatae*; and *A. arctica*, based on the *Armeria vulgaris* forma *arctica* of Chamisso, from the Alaskan coast and islands, and *A. sanguinolenta*, from "Sumpfen Nordamerika's," both of the *Barbatae Truncatae*. In Boissier's monograph<sup>2</sup> of *Armeria* in 1848 two primary divisions of the genus were recognized. *Macrocentron*, corresponded in general to Wallroth's two groups called *Rostellatae*, with his *Calvae*, while *Plagiobasis* embraced all the remaining species. The second and much larger section, *Plagiobasis*, including all the American species, was divided into § 1. *Holotrichae*, answering to Wallroth's *Mastrucatae Truncatae*, with calyx pubescent both on and between the ribs, and § 2. *Pleurotrichae*, equalling Wallroth's *Barbatae Truncatae*, with calyx pubescent only on the ribs. Wallroth's three North American species were recognized, and *A. andina* Poepp. & *β. californica* was described from California.

Despite their recognition by Boissier, and the fact that by him as by their describer they were considered referable to two distinct sections or subsections, no notice of Wallroth's species seems to have been taken in American botanical literature in the seventy-two years since their publication. Gray<sup>3</sup> in 1878, treating of *Armeria vulgaris* Willd. from North America, described it as having the calyx-tube

<sup>1</sup> Beitr. i. 169–218 (1844).

<sup>2</sup> Boiss. in DC. Prod. xii. 674–689 (1848).

<sup>3</sup> Syn. Fl. ii. pt. 1. 55 (1878).

"10-nerved, hairy at least on the stronger nerves or angles; the lobes blunt or cuspidate," and gave it "in various forms" a range through Arctic America on both coasts and south to California, Europe, northern Asia, Chili, and Patagonia. Later American authors have without exception followed Gray's course in combining the eastern and western forms of our coasts, and in the latest work treating of the genus in North America, Britton & Brown's *Illustrated Flora* (ed. 2, ii. 719 (1913)), the calyx is described in similar terms.

Reference has already been made to Kuntze's proposed amalgamation of all the fifty or more described species in one, the original *Statice Armeria* L. The slightest consideration of any moderately large collection of the genus is sufficient to show the absurdity of such a course. Although the species are usually closely similar in habit, characters of fair significance and constancy can be found in the size, shape, and pubescence of the leaves, in the size of the head and the nature of the bracts, and occasionally in the pubescence of the stem. It is to the fruiting calyx, however, that one must look for the essential characters not only of sectional subdivision but also of specific discrimination. The constancy of the characters on which the subsections *Holotrichae* and *Pleurotrichae* are based has indeed been called into question by more than one botanist. It was however firmly supported by Boissier, whose knowledge of the genus as a whole has probably not yet been surpassed, and Druce, who has carefully examined the English species as to this feature, states<sup>1</sup> that he has found no evidence of intergradation between the two groups. The very confused state of the material in most herbaria undoubtedly contributes to the belief that the location and amount of the pubescence is subject to variation, but in the apparent absence of proof of this assumption the opinion of Wallroth and Boissier, the two leading monographers of the genus, is not lightly to be disregarded, and the evidence I am about to bring forward, derived from a careful study of the American species, goes far to confirm the validity of the characters on which the groups *Holotrichae* and *Pleurotrichae* are founded.

Careful examination of the material in the Gray Herbarium shows that in every one of the thirty collections of *Statice* from the eastern coast of America (including several from Greenland) the calyx-tube is more or less hairy between the ribs, at least in the neighborhood

<sup>1</sup> Journ. Linn. Soc. Lond. xxxv. 68-70 (1901).



of the oblique rib connecting the intermediate ribs at apex with the main ribs of the calyx, which itself (*i. e.* the cross-rib) is also always hairy; while each of the twenty-two collections from western America, including the area from Kotzebue Sound to Monterey, is absolutely glabrous between the ribs, although these are frequently as hairy as in the eastern species, and the cross-ribs uniting the main and intermediate ribs are likewise always perfectly glabrous. Although no other constant differences have been discovered between the plants of the two areas, the absolute constancy of this feature and its correlation with geographic distribution, in the light of the importance laid upon just this character by Wallroth and Boissier, lead me to consider the plants perfectly distinct. The two western species of the *Pleuro-trichae* proposed by Wallroth, however, are not confirmed by the material examined, which is much more extensive than that accessible to him.

Although agreeing in the essential character of pubescence of the calyx-limb, the eastern plants differ somewhat among themselves in regard to the shape of the calyx-lobes, which may be merely acuminate, apiculate, short-cuspidate, or rather long-cuspidate (cusp 0.4–0.5 mm. long). Careful study shows that while the distinction between the long-cuspidate and short-cuspidate forms seems a fairly constant one, no line can be drawn between the short-cuspidate, apiculate, and acuminate forms, all three or gradations between them occurring not rarely on the same calyx. Accordingly it has seemed best to recognize the long-cuspidate form, which best agrees with Wallroth's description of his *A. labradorica*, as varietally distinct from the more varied but entirely intergradient plexus of short-cuspidate to acuminate forms. While the long-cuspidate form, in all the material at hand, is always pubescent on the scape, as described by Wallroth, the other plant occurs in both a glabrous and a pubescent form, although no concomitant characters have been found to distinguish them. It has seemed advisable to give this variation only formal recognition. The three sheets of this variety with merely acuminate or apiculate calyx-lobes from Mount Albert, Quebec, the only known station south of Labrador, agree in having ciliate leaves, all the others being glabrous on the leaves even if puberulous on the scapes, with the exception of a single collection from Labrador.

The western plants, as has been brought to my attention by Prof. Fernald, also show differences among themselves worthy of at least

varietal recognition. The Californian material, distinguishable at a glance by its longer broader leaves and generally taller scapes, has always glabrous leaves with a very blunt sometimes almost truncate tip, naturally more obvious in the broader-leaved specimens but distinguishable in all. In the Alaskan material, on the other hand, the usually much shorter, narrower, and laxer leaves are always more or less ciliate, and the tip is distinctly subulate-pointed. However no absolute line of demarcation exists. In the specimens collected by Bridges (no. 320) and Bolander in California the glabrous leaves are often more or less subulate-pointed; Allen's number 96, from Washington, like Lyall's plants from Vancouver Island, is also more or less intermediate in this respect; and Rosendahl & Brand's 19, from Vancouver Island, although with the stiff glabrous leaves of the Californian plant, is quite intermediate in nature of leaf-tip. While the Alaskan form, in habit and in leaf-apex, thus shows a likeness to the eastern form, its calyx-characters are distinctly those of the Californian plant, with which as has been shown it intergrades, and the two seem best treated as varieties of one species.

The relationship of the Californian plant, which was described by Boissier as a variety of *Armeria andina* Poepp. (*Statice andina* (Poepp.) Rendle), to the latter is quite evident when material of the two is compared. The two collections in the Gray Herbarium (by C. Gay and Reed) referable to *S. andina* nevertheless show sufficiently marked differential characters from the North American species to make it inadvisable to unite them, particularly when the great gap in their ranges is considered. They have an apparently much longer leafy axis than the Californian plant, and the blunted emarginate calyx-lobes are mucronulate or aristulate from the terminal notch by the prolonged midribs of the lobes. The stem is also strongly pustulose, a feature perhaps of no great consequence but at any rate consistently shown by the South American material in the Gray Herbarium. Although the resemblance between the two is sufficient to indicate the possibility of a genetic relationship in the not very remote past, the present gap in characters and range and the intergradation above demonstrated between the Alaskan and Californian extremes indicate that the latter is best treated as a variety of the Alaskan plant.



## KEY TO FORMS.

- a. Calyx-tube pubescent between as well as on the ribs; cross-ribs pubescent.
  - 1. *S. labradorica* (Wallr.) Hubb. & Blake.
- b. Calyx-lobes long-cuspidate (cusp 0.4–0.5 mm. long). . . . . Var. *genuina* Blake.
- b. Calyx-lobes acuminate to short-cuspidate (cusp 0.2 mm. long or less).
  - Var. *submutica* Blake.
  - c. Scape glabrous. . . . . Forma *glabriscapa* Blake.
  - c. Scape pubescent. . . . . Forma *pubiscapa* Blake.
- a. Calyx-tube pubescent only on the ribs; cross-ribs glabrous.
  - 2. *S. arctica* (Cham.) Blake.
- b. Leaves ciliate, the apex subulately acutish. . . . . Var. *genuina* Blake.
- b. Leaves glabrous, the apex very bluntly rounded.
  - Var. *californica* (Boiss.) Blake.

1. **STATICE labradorica** (Wallr.) Hubbard & Blake, comb. nov. Root long, slenderly tapering, white within. Scapes 1–7, glabrous or densely shortly spreading-pubescent, 2.8–27 cm. high. Leaves in a dense basal tuft, narrowly linear, shortly subulate-pointed or slightly apiculate, glabrous or rarely ciliate, 1-nerved or the broader 3-nerved, the nerves slightly impressed above, 3.5–8 cm. long, 0.7–1.5 (–2) mm. wide. Heads hemispheric, 1.5–2.1 cm. in diameter. Two outermost bracts lance-ovate, acuminate, scarcely mucronate, glabrous, with brownish center, about 8 mm. long; next three empty, broadly elliptic, mucronate by the excurrent brown midrib at the rounded apex, 8 mm. long, 5 mm. wide. Spikelets 2–3-flowered. Fruiting bract suborbicular-cuneate or -obovate, broadly rounded at the somewhat undulate apex, scarious-membranaceous, very slightly greenish-nerved in middle, with brownish center and often purplish border, 7.5–8.5 mm. long. Pedicels glabrous, short; scar of attachment oblique, ovate. Calyx obconic below, with funnellform limb, 6–7 mm. long; proper tube 3–3.3 mm. long, 10-ribbed, densely ascending-pilose on all the ribs as well as on the cross-ribs (i. e. those connecting the main and intermediate ribs), and more or less densely ascending-pilose between them, at least toward the summit of the proper tube; limb 5-lobed, whitish to pale lavender, scarious, the 5 brown or purplish-brown short-pilose nerves evanescent in the middle of the lobes or running to their apices and prolonged into a cusp; lobes deltoid or lance-deltoid, from acuminate to apiculate, short-cuspidate, or long-cuspidate, about 1.2 mm. long; intermediate teeth truncate, emarginate, or rounded, about 0.3 mm. high. Petals lilac. — *Armeria labradorica* Wallr. Beitr. i. 185 (1844); Boiss. in DC. Prod. xii. 678 (1848). *Statice Armeria* and *Armeria vulgaris* Am. auth., in part.—The above description is drawn to include all variations of the species. This may be divided into the following varieties and formae.

Var. **genuina** Blake, var. nov. Calycis lobi longe (0.4–0.5 mm.) cuspidati. Scapus semper pubescens.—Calyx-lobes with a cusp 0.4–0.5 mm. long. Scape always pubescent.—FIG. 2.—Greenland



and Labrador.—GREENLAND: Netiuleme, Whale Sound, 13 Aug. 1894, *Wetherill* 176. LABRADOR: Netlik Bay, 4 Aug. 1861, *Hayes Expedition* 35; Kangalaksiorvik Bay, Sept. 1908, *O. Bryant*; Nain, 11 Aug. 1897, *Sornborger* 112.

Var. **submutica** Blake, var. nov. Calycis lobi vel acuminati vel apiculati vel breviter cuspidati (cuspidate 0.2 mm. longa vel brevior).—Calyx-lobes acuminate, apiculate, or short-cuspidate, the cusp 0.2 mm. long or less.

Forma **glabriscapa** Blake, forma nov. Scapus glaber.—FIG. 1.—Greenland to Newfoundland and Mt. Albert, Quebec.—GREENLAND: Aamhavn, 1870, *Puggren*; Fan Glacier, Inglefield Gulf, 2 Aug. 1894, *Wetherill* 143. LABRADOR: Forteau, 1870, *Rev. S. R. Butler*. NEWFOUNDLAND: limestone barrens, near sea level, Pointe Riche, 4 Aug. 1910, *Fernald, Wiegand, & Kittredge* 3880; serpentine tablelands, Bonne Bay, 380 m., 27 Aug. 1910, *Fernald, Wiegand, & Kittredge* 3879; highest summits of the Lewis Hills, July 1911, *L. S. Sanford*; sandy plains, Coal River, 1896, *Waghorne* 29; Blomidon District, July 1911, *C. C. Stewart* 11; serpentine and magnesian limestone barrens, northern bases and slopes of Blomidon Mts., 24 July 1910, *Fernald, Wiegand, & Kittredge* 3878; serpentine tableland, 550 m., northeast region of the Blomidon Mts., 21 Aug. 1910, *Fernald & Wiegand* 3878a. QUEBEC: Mt. Albert, Gaspé, common above 915 m., 27 July 1881, *J. A. Allen*; very abundant in crevices and detritus of serpentine, especially on open barrens, 900–1050 m., Mt. Albert, 8 July 1905, *Collins & Fernald* 127; serpentine barrens, Mt. Albert, 23 July 1906, *Fernald & Collins* 710 (TYPE in Gray Herb.).

Forma **pubiscapa** Blake, forma nov. Scapus plus minusve dense breviterque patenti-pubescent. —Greenland and Labrador.—GREENLAND: near Cape Acland, Inglefield Gulf, 31 July 1894, *Wetherill* 122; Cape York, 23 July 1894, *Wetherill* 65; Ulugsak near Arveprinsens Ejland, 3 July 1883, *Sylow*; Godhavn, 7 Aug. 1877–78, *Kumlein*; Karsuk, *Rink*. BAFFIN LAND: Nikkerton Islands, 15 July 1877–78, *Kumlein*. UNGAVA: Port Burdell, Hudson Strait, 18 July 1910, *J. M. Macoun* 79392. LABRADOR: Ehortiarsuk, Cape Chudleigh, Aug. 1896, *C. Schmitt* 308; 32 km. north of Narvak, 28 Aug. 1908, *H. S. Forbes*; Rama, July–August 1899, *A. Stecker* 328 (TYPE in Gray Herb.); Hebron, 4 Aug. 1908, *H. S. Forbes*; hills back of Okkak, Aug. 1911, *F. C. Hinckley*; Flint I., near Port Manvers, 22 Aug. 1908, *O. Bryant*.

Wallroth's *Armeria labradorica* was based on specimens collected by Sommer "in den Sumpfen auf Labrador" in 1833. Its relationship with *Statice maritima* Mill. of Europe is undoubtedly close, but I have seen no European specimens exactly matching our plant, and in any case the European species are so confused and so much in need of careful revision that it seems best to adopt for the American plant

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Lab. 36, 184-5, 1934.

R/W

Wallroth's clearly applicable name until the whole group can be subjected to the thorough investigation it so urgently requires, material for which can be found only in European herbaria. From the characters given by Wallroth ("Frucht . . . sowohl an den hervorstehenden Rippen als an den Zwischenfeldern fein beharrt. Die Fruchtkrone fast von der Länge der Frucht, rundlich und kurz gelappt und mit eben so kurzen Grannen versehen," or as given in the Latin diagnosis, "fructibus obovatis breviter pedicellatis mastrucatis, pappi lobis ovatis subaristatis") it seems highly probable that the specimens collected by Sommer are referable to my first variety, which is accordingly designated var. *genuina*.

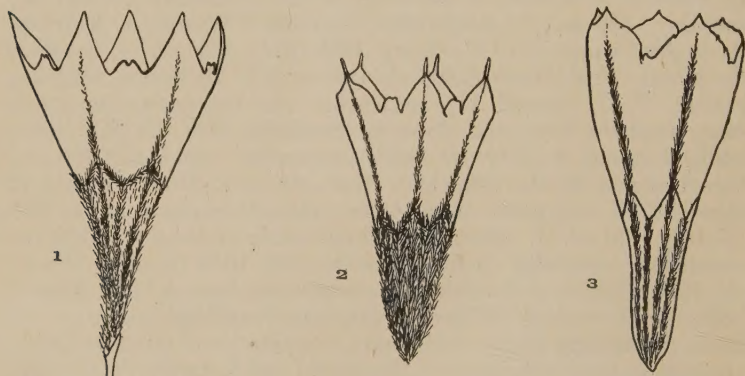


FIG. 1.—*Statice labradorica* (Wallr.) Hubbard & Blake var. *submutica* Blake forma *glabriscapa* Blake (Fernald & Collins 710).

FIG. 2.—*S. labradorica* var. *genuina* Blake (Sornborger 112).

FIG. 3.—*S. arctica* (Cham.) Blake var. *californica* (Boiss.) Blake (Baker 2851). All  $\times 7$ .

2. *STATICE arctica* (Cham.) Blake, comb. nov. Root as in the last or thicker, pinkish in section. Scapes 1-6, erect, slender or stoutish, always glabrous, more or less glandular-punctate, 12-52 cm. high. Leaves in a dense basal tuft, linear, rounded or blunt at apex, or subulately acutish, enlarged below into the scarios-margined base, glabrous or ciliate, 1-3(-sub-5)-nerved, (3-)5-20 cm. long, 0.8-3(-4.5) mm. wide. Heads hemispheric, 1.6-2.5 cm. thick. Outer bracts three, ovate to oblong-ovate, oblong-lanceolate, or rarely lanceolate, acute, scarcely mucronate, scarios-margined, 6-13 mm. long, 3.5-5 mm. wide, glabrous. Sterile bracts about seven, rotund-elliptic, rounded at apex, not mucronate, broadly scarios-margined, 9-12 mm. long, 4.5-5.5 mm. wide. Spikelets 3-flowered. Fruiting bract elliptic-cuneate, broadly rounded at apex, not mucronate, scarios, nerved in middle below, ca. 11 mm. long, 6.5 mm. wide. Bractlets (each subtending a flower) broadly oval, rounded at apex, scarios, 6 mm.



long or less. Pedicels glabrous, 3.5 mm. long or less; scar of attachment oblique, obovate-fusiform. Calyx 6.5–7 mm. long; proper tube obconic, 10-ribbed, the ribs pilose with spreading-ascending hairs, the interspaces and cross-ribs entirely glabrous; limb funnel-form, 5-nerved, the nerves shortly pilose; lobes about 1 mm. long, depressed-deltoid, abruptly apiculate or mucronulate, rarely retuse, the nerve evanescent near middle or continuing to apex, the tooth or mucro 0.2–0.4 mm. long; intermediate teeth obsolescent or absent. Petals lilac.—*Armeria vulgaris* Willd. forma *arctica* Cham. Linn. vi. 566 (1831). "*A. vulgaris* E. *humilis* forma *arctica* Ebel, De Armer. Diss. 31 (1840)," fide Wallr. l. c. *A. arctica* Wallr. Beitr. i. 193 (1844); Boiss. in DC. Prod. xii. 679 (1848). *A. sanguinolenta* Wallr. l. c. 207 (1844); Boiss. l. c. 682 (1848). *A. vulgaris* and *Statice Armeria* Am. auth., in part.—Two varieties may be recognized.

Var. **genuina** Blake, var. nov. Folia ciliata apice subulato-acutiuscula.—Alaska to British Columbia and Washington.—ALASKA: Kotzebue Sound, *Bongard*, *Arnott* (*Beechey's Voyage*), 1881, *Muir* 58; Cape Nome, 1900, *Blaisdell*; Unga I., 2 July 1872, *Harrington*; Igognak I., Unalaska, 12 Sept. 1873, *U. S. Coast Survey*; Arakamtchene I., Bering Sts., 1853–56, *C. Wright*; St. Paul I., *Elliott*, 28 July 1891, *J. Macoun*. BRITISH COLUMBIA: Vancouver I., 1858, *Lyall*. WASHINGTON: prairie, *Roy*, 13 May 1899, *O. D. Allen* 96. *Lyall's* and *Allen's* plants show some approach in leaf-tip to the next variety. *Rosendahl & Brand* 19, from crevices of slate rock, District of Renfrew, Vancouver Island, is intermediate in leaf-tip but has the glabrous leaves of var. *californica*.

Var. **californica** (Boiss.) Blake, comb. nov. Folia glabra apice late rotundata vel subtruncata, quam in var. *genuina* saepe latiora et longiora.—*Armeria andina* Poepp. *β. californica* Boiss. l. c. 678 (1848).—Fig. 3.—CALIFORNIA: hills near San Francisco, 8 April–1 May, *Bigelow*; common on ridges, sandhills near San Francisco, 3 May 1903, *C. F. Baker* 2851; Oakland, *H. Mann* 21; near Monterey, *Hartweg* 1927; Monterey, 1–15 June 1903, *G. Newell*; Pacific Grove, July 1891, *Michener & Bioletti* 194; along beach, Pacific Grove, 30 April 1903, *Heller* 6641; without locality, *Bridges* 320, *Brewer* 650, *Bolander*, *Coulter*, 577.

In this species as in *S. labradorica* hexamerous calyces occasionally occur. The Unga Island specimen collected by *Harrington* is decidedly aberrant, having a 6-lobed calyx with merely blunt or even emarginate lobes, but is connected by *Muir's* *Kotzebue* plant with the normal form.

It may be well to call attention to the fact that the differences shown in the figures are, with the exception of those mentioned in the text, entirely individual and in no way diagnostic of the forms represented.

STOUGHTON, MASSACHUSETTS.

## THE GENUS ELATINE IN EASTERN NORTH AMERICA.

M. L. FERNALD.

It has become customary to treat all *Elatine* from the margins of ponds and streams in eastern America as *Elatine americana* (Pursh) Arn.,—to such an extent that local botanists rarely examine the details of the plants. During the past summer, however, while exploring the tidal reaches of the lower Kennebec system in Maine, Mr. Bayard Long and the writer were much interested in a peculiar prostrate and matted *Elatine* which was found in great abundance in the tidal mud of Cathance River at Bowdoinham. The plants of these tidal flats differed somewhat in appearance, the smaller plants having the leaves cuneate-obovate to oblong and sessile, the larger plants having the mostly larger leaves more broadly obovate and petioled. A detailed study of this material, as well as all the specimens in the Gray Herbarium, the herbarium of the New England Botanical Club, and of the Academy of Sciences of Philadelphia (including the herbarium of the Philadelphia Botanical Club) shows that we have in the Atlantic states and eastern British America three quite distinct species of the genus, distinguished not only in the form of the foliage but in the floral characters and in the shape, size and markings of the seed.

The commonest plant is the small species in sandy, gravelly or peaty pond-margins with rather small cuneate-obovate to oblong sessile leaves. In this plant the flowers are dimerous, having two sepals, two petals and two stamens. The seed is comparatively thick and more or less barrel-shaped, with rounded ends, 0.5–0.7 mm. long and 220–280  $\mu$  thick. The seed has distinct longitudinal ribs and between them 15–18 obtuse cross-ribs marking off somewhat rectangular reticulations. This plant, the commonest species in eastern America, was well described and illustrated by Nuttall as *Crypta minima*<sup>1</sup> from “gravelly banks of the Delaware overflowed by the tide.” The plant is well illustrated with two sepals, two petals and two stamens, and the type material, now preserved in the herbarium of the Academy at Philadelphia, has the very characteristic seed of the common plant of sandy and gravelly shores. This species, which Nuttall thought

<sup>1</sup>Nuttall, Journ. Acad. Sci. Phil. i. 117, t. 6, fig. 1 (1817).



might be the same as Pursh's *Peplis americana* but which is apparently quite distinct from Pursh's plant, although commonly occurring in fresh sandy and gravelly shores, occasionally extends into wet clay and even into the borders of salt marshes, although it is apparently rare in these extreme habitats.

The plant which is more distinctive of brackish or tidal mud, the plant with petioled obovate leaves, has a trimerous flower, with three sepals and three petals, and is undoubtedly the plant intended by Pursh as his *Peplis americana*, which was described, "foliis crassis spathulato-obovatis", and which was "inundated during its flowering time, in slow-flowing places of rivers, in Pennsylvania."<sup>1</sup> The habitat, it is true, is so similar to that of Nuttall's later published *Crypta minima* that it was quite natural for Nuttall to assume that his plant and Pursh's were identical, but Nuttall's species had dimerous flowers, while Pursh's plant of inundated shores was put by him into the Linnean group *Hexandria*, where he certainly would not have placed a plant with dimerous flowers.

The plant with petioled obovate leaves, which occurs on the tidal flats of Cathance River in Maine and on the tidal flats of the Delaware, as well as at a few other stations along the Atlantic coast, has very definitely three sepals and three petals, although the writer has been unable to determine with complete satisfaction (owing to the maturity of specimens) whether the stamens are three or six. In view, however, of the occurrence of this plant with trimerous flowers and obovate leaves on the tidal flats of the Delaware River, there is little doubt that it is the plant intended by Pursh as *Peplis americana*. This plant, which is identified with Pursh's species and which was afterwards called *Elatine americana* by Arnott, differs from *Crypta minima* (Nuttall) Fischer & Meyer in having the seeds ordinarily curved and decidedly more slender, ranging from 140–190  $\mu$  in diameter and with the longitudinal ribs much more irregular and obscure and connected by 20–30 acute cross-ribs.

The third plant of the Atlantic slope is a well known species of Europe, *E. triandra* Schkuhr, which has the trimerous flowers and essentially the seed of true *E. americana* but which has thin linear, elongate-lanceolate or lance-spatulate, often toothed leaves, and which often grows to a height of 2 dm. with long internodes, in these

<sup>1</sup> Pursh, Fl. Am. Sept. i. 238 (1814).

characters being quite unlike either of the other eastern American plants. The only known station in the Atlantic states for *E. triandra* is at Skowhegan, Maine, where it was collected in October, 1914, by Miss Louise H. Coburn from the bottom of a small pond in the park. In response to a letter from the writer Miss Coburn collected additional material on October 28, 1916, and wrote in regard to the station: "The pond is a natural bog-hole, enlarged and shaped for the Park and has been planted with water-lilies, which came from the Mount Desert Nurseries, Bar Harbor, and a few from Farquhar & Co. of Boston and Dedham."

Whether or not *Elatine triandra* is indigenous in Maine waits to be determined. The species is certainly indigenous in Yellowstone Lake and at other very remote points in the Rocky Mountain region, although there is grave doubt as to the identity of the plant reported under this name from Illinois. The species is common in Europe and it is not impossible that it was introduced with roots of nursery stock into the pond at Skowhegan. The question whether it is indigenous in New England can be determined only by finding it at other stations which have not been altered or planted to foreign plants.

By way of summary and in order to check the herbarium specimens seen, the following synopsis is appended. The specimens examined are in the Gray Herbarium and the herbaria of the New England Botanical Club and of the Academy of Sciences at Philadelphia.

- A. Seeds slender-cylindric, usually curved, 140–190  $\mu$  thick, with 20–30 acute cross-ribs between the irregular or obscure longitudinal ribs: flowers 3-merous. B.

- B. Leaves obovate to broadly spatulate, with rounded summits.

ELATINE AMERICANA (Pursh) Arnott, Edinb. Journ. Nat. & Geogr. Sci. i. 431 (1830). *Peplis americana* Pursh, Fl. Am. Sept. i. 238 (1814).—Forming prostrate mats becoming, when fully developed, 0.6–2 dm. broad; the subascending branchlets 1–5 cm. long: leaves 3–8 mm. long, 1–4.3 mm. broad (in dried specimens): sepals 3: petals 3: stamens (?) 3 or 6.—Chiefly, if not always, in wet clay, locally from Quebec to Delaware and eastern Pennsylvania. QUEBEC: on mud, Hull, October, 1890, *J. Macoun*: near Hull, October 4, 1904, *J. Macoun*, Herb. Geol. Surv. Can. no. 76,922. MAINE: tidal mud-flats of Cathance River (best developed on open mud of small tributary brooks and rills), September 14 and 19, 1916, *Fernald & Long*, no. 14,107. CONNECTICUT: muddy border of Cartwheel Pond, Southington, August 22, 1900, *C. H. Bissell*; muddy shore of pond, Maltby Park, Orange, October 10, 1873, *F. W. Hall* (plants with

Bowdoinham,



unusually expanded red petals); muddy shore of pond, out of water for some time, Huntington, August 16, 1899, *E. H. Eames*. NEW JERSEY: along Crosswicks Creek, Bordentown, Burlington Co., July 15, 1916, *Long*, nos. 6049, 6062; shores of Delaware River, Camden, September, 1877, *Martindale*; tidal mud of Delaware River, Camden, October 7, 1877, *C. F. Parker*; shores of Delaware near Cooper's Point, September 15, 1858, *W. W. Wister*. PENNSYLVANIA: banks of Delaware, Andalusia, August, 1866, *Martindale*; mud island in Delaware near Andalusia, August, 1898, *C. S. Williamson*; in tidal mud of Delaware, Richmond, Philadelphia, October 11, 1868, *E. D.*; tidal mud about the mouth of the Schuylkill and Tinicum, Delaware County, August 2, 1865, *C. E. Smith*. DELAWARE: Brandywine Creek by the Rolling Mill and Railroad Bridge, Wilmington, 1863, *Canby*; muddy banks of Brandywine Creek, Wilmington, July 16, 1865, *A. Commons*; tidal muddy banks of Brandywine between the high and low water marks, Wilmington, October 18, 1873, *A. Commons*; Noxontown Pond near Middletown, Newcastle County, August 16, 1908, *E. B. Bartram*; shore, two miles southeast of Middletown, August 16, 1908, *VanPelt & Long*.

*B.* Leaves linear to linear-spatulate, truncate or emarginate at tip.

*E. TRIANDRA* Schkuhr, Bot. Handb. i. 345, t. 109b, fig. 2 (1791). — Less matted; the ascending branches up to 2 dm. long: leaves 0.4–1.2 dm. long, 1–2 mm. broad.—Eurasia; lakes and ponds of Maine and the Rocky Mountain region, little known in America. The only eastern material seen is from MAINE: bottom of little pond in the Park, Skowhegan, October 15, 1914, October 28, 1916, *Louise H. Coburn*.

*A.* Seeds thick-cylindric or barrel-shaped, mostly straight, 220–280  $\mu$  thick, with distinct longitudinal ribs and 15–18 obtuse cross-ribs: flowers 2-merous.

*E. MINIMA* (Nutt.) Fisch. & Meyer, Linnaea, x. 73 (1836). *Crypta minima* Nutt. Journ. Acad. Phila. i. 117, t. 6, fig. 1 (1817). *E. Clintoniana* Peck, Rep. Reg. Univ. N. Y. xxii. 52 (1869).—Creeping, forming small mats rarely 1 dm. broad; the erect or strongly ascending branchlets 0.2–5 cm. high: leaves cuneate-obovate to oblong, sessile or obscurely petioled, rounded at summit, 0.7–5 mm. long, 0.3–3 mm. broad: sepals 2: petals 2: stamens 2.—On sandy, peaty or more rarely muddy shores and in shallow waters, Newfoundland to Virginia and Minnesota. NEWFOUNDLAND: shallow water, sandy margin of pond, Whitbourne, August 8, 1911, *Fernald & Wiegand*, no. 5853; clay bottoms, small ponds among the hills back of Birchy Cove (Curling), August 11, 1910, *Fernald & Wiegand*, no. 3710. MAINE: submersed at sandy margin of Pennamaquan River, Pembroke, August 18, 1909, *Fernald*, no. 1875; border of Mill Pond, Somesville, July 28, 1892, *E. L. Rand*, September 20, 1892, *Fernald*;

emersed and submersed, gravel at margin of Chickawaukie Pond, Rockland, August 22, 1909, *Fernald*, nos. 1873, 1874; in mountain pond, Mexico, September, 1894, *Kate Furbish*; abundant on muddy shore of Messalonskee River, Waterville, September 2, 1898, *Fernald*, no. 2607; in 1 m. of water, Great Pond, Belgrade, August 31, 1898, *Fernald*, no. 2623; less common than *E. americana* on tidal mud-flats of Cathance River, Bowdoinham, September 14 and 19, 1916, *Fernald & Long*, no. 14,104; border of salt marsh, Back River Creek, Woolwich, September 15, 1916, *Fernald & Long*, no. 14,105; sandy bottom of Sand Pond, Baldwin, August 30, 1916, *Norton, Fernald & Long*, no. 14,107; abundant in shallow margin of Bauneg Beg Pond, North Berwick, September 25, 1897, *Parlin & Fernald*. NEW HAMPSHIRE: sandy shores of Gilmore Pond, Jaffrey, July 20, 1898, *Robinson*, no. 498; shore of Emerson Pond, Rindge, August 17, 1912, *F. F. Forbes*. MASSACHUSETTS: wet sand, border of Haggett's Pond, Andover, September 15, 1882, *E. & C. E. Faxon*, September 24, 1899, *Rich, Williams*; sandy beach of Wenham Lake, Wenham, September 11, 1913, *Fernald, Hunnewell & Long*, no. 9935; Flax Pond, Lynn, August, 1880, *H. A. Young*; Sluice Pond, Lynn, August 22, 1880, *E. & C. E. Faxon*; Spot Pond, Melrose, September 29, 1880, *E. & C. E. Faxon*; submerged margin of Spot Pond, Stoneham, September 29, 1880, *E. & C. E. Faxon*, August 19 and October 6, 1894, *Rich*; wet sandy or peaty margin of Winter Pond, Winchester, September 22, 1908, *Fernald*, October 5, 1913, *Fernald & Long*, no. 9936; sandy margin of Heard's Pond, Wayland, September 10, 1909, *Fernald*; Learned's Pond, South Framingham, August, 1874, *C. E. Faxon*; shallow water near sandy margin of Cooper's Pond, Carver, August 30, 1913, *Fernald, Hunnewell & Long*, no. 9931; in shallow waters of pond, Plymouth, August 26, 1913, *S. N. F. Sanford*; damp sandy beaches of Great South Pond and Boot Pond, Plymouth, September 6, 1913, *Fernald, Hunnewell & Long*, nos. 9932, 9933; sandy borders of small ponds, Bourne, September 15, 1901, *Kennedy, Williams & Fernald* in *Plantae Exsiccatae Grayanae*, no. 23; Nine Mile Pond, Centreville, Barnstable, September 4, 1898, *Williams, Greenman*, no. 425; shallow waters near margins of small sand-bottomed ponds west of White Pond, Chatham, September 9, 1913, *Fernald & Long*, no. 9934; Nonquitt, August 1890, *E. W. Hervey*; pond, Nantucket, August, 1897, *L. L. Dame*; Maxcy's Pond, Nantucket, August 12, 1905, *Churchill*; sandy beach of Wallum Pond, Douglas, October 29, 1911, *Fernald*; margin of Bass Pond, sand plains, Springfield, August 27, 1913, *Bissell & Weatherby*; edge of Goose Pond, Tyringham, July 27, 1911, *R. Hoffmann*. RHODE ISLAND: "In Republica Insulae Rhodiensis," *Thurber & Calder*; Apponaug Pond, August 26, 1880, *E. & C. E. Faxon*; Tiverton, August 18, 1877, *J. C. Phelps*; Sands Pond, Block Island, August 18, 1892, *Bailey & Collins*; peaty ponds and pools between Pilot Hill and Southeast Point, Block Island, August 20, 1913, *Fernald, Hunnewell & Long*, no. 9930. CONNECTI-



CUT: shallow water of Prospect Reservoir, Prospect, September 1, 1912, *A. E. Blewitt*, no. 1549; Middlebury, August 28, 1896, *W. M. Shepardson*; shallow water and shores of Lake Quinnipaug, North Guilford, August 19, 1906, *G. H. Bartlett*; New Haven, September 16, 1879, *J. A. Allen*; Lake Saltonstall, September 23, 1880, *E. & C. E. Faxon*. NEW YORK: rocky shore of Bowman's Pond, Sandlake, Rensselaer County, July and August, 1868 (?), *C. H. Peck* (duplicate type of *E. Clintoniana* Peck); lake, Averill Park, Rensselaer County, September, 1883, *J. H. Wibbe*; submerged in shallow water, sandy bottom of White Lake, Forestport, Oneida County, July 22, 1904, *Haberer*, no. 2741; Albany, *A. Gray*; shores of Lake Mahopac, Putnam County, August, 1898, *J. Carey*; Long Island, *J. Torrey*. NEW JERSEY: pond near Milton, Morris County, August 2, 1904, *C. S. Williamson*; north shore of Spring Lake, Monmouth County, September 15, 1907, *C. S. Williamson*; in water, shore of Maxon's Pond, Point Pleasant, Ocean County, July 7, 1910, *Van Pelt & Brown*, no. 271; Bay Head, Ocean County, August 8, 1908, *E. B. Bartram*; Toms River at Island Heights, August 19, 1892, *J. R. Churchill*; margin of Delaware above William Cooper's Ferry, *S. N. Conrad*; shores of Delaware, Camden, September, 1877 (mixed with *E. americana*) *Martindale*. PENNSYLVANIA: banks of the Delaware overflowed by the tide, West Kensington, July, 1817 (?) *Nuttall* (type of *Crypta minima*); tidal mud about the mouth of the Schuylkill and Tinicum, Delaware County, August 2, 1865 (material mixed with *E. americana*), *C. E. Smith*. MARYLAND: sandy shores of Wicomico River near Salisbury, September, 1863, October, 1864, *Canby*. VIRGINIA: Alexandria, *A. H. Curtiss*. MINNESOTA: Linn Lake, Chisago County, August, 1872, *B. C. Taylor*.

GRAY HERBARIUM.

## A NEW AGROPYRON FROM CAPE BRETON.

F. TRACY HUBBARD.

AGROPYRON **acadiense**, sp. nov. Glaucissimum, stoloniferum; rhizomata squamigera pallide brunnea. Culmi solitarii vel pauci, glabri, 2-6.5 dm. alti, nodis (3) valde constrictis flexilibusque; innovationes duae vel plures, culmis molto breviores. Vaginae basilares plures, glabrae, nonnullae elaminatae; illae culmorum laeves glabraeque marginibus aliquando breve ciliatis exceptis, inferiores purpureo-rosae internodia circum aequantes vel etiam ea (saltem apud innovationes) superantes, superiores internodiis breviores, ad oram laminae

vaginis auriculatis angustiores. Ligulae circa 0.5 mm. longae, membranaceae erosaeque. Laminae e basi plus minus planato involutae, 5-16 cm. longae, basi ad 3 mm. latae, valde patentes rigidaeque, infra glabrae laevesque, supra in nervis scabrae marginibus praecipue basin versus barbulatis. Inflorescentia compacta e vagina superiore plus minus exserta, aliquando a folio subtendente superata, 4-8.5 cm. longa ad 1 cm. lata; rachi internodiis superioribus exceptis fere glabro. Spiculae 1.2-1.5 cm. longae, lateraliter compressae, paullum divergentes, 3-5-florae; glumae duas tertias spiculorum longitudine aequantes, glabrae, inferior 7-nervata, circa 8 mm. longa, carina apicem acutiusculum versus barbulata, superior 5-nervata, circa 9 mm. longa, carina apicem acutiusculum vel minute mucronulatum versus barbulata; lemmata glabra, 5-nervata, ad apicem in subulam ad 4 mm. longam dorso barbulatam abrupte contracta, circa 1-1.2 cm. longa; paleae 2-carinatae carinis barbulatis, quam lemmata breviores, ad apicem minute ciliolatae, truncatae paullum retusatae.

Very glaucous with a long, scaly, pale brown rootstock: culms solitary or few to a clump, 2-6.5 dm. tall, 3-noded, glabrous; nodes much constricted and flexible when fresh; innovations two to several, much shorter than the culms; basal sheaths several, glabrous, some of them bladeless; those of the culms smooth and glabrous except the sometimes short-ciliate margins, the lower purplish-pink, about equalling or exceeding the internodes (those of the innovations longer than the internodes), the upper shorter than the internodes, all auriculate and contracted to the blade at the throat: ligules about 0.5 mm. long, membranaceous and erose: blades involute from a flattened base, 5-16 cm. long, 3 mm. broad at base, strongly spreading and rigid, lower surface glabrous and smooth, upper surface scabrous on the nerves, margins barbate especially toward the base: inflorescence compact, more or less exserted from the upper sheath, sometimes exceeded by the subtending leaf, 4-8.5 cm. long, up to 1 cm. broad, the rachis almost glabrous except the upper internodes which are slightly barbate: spikelets 1.2-1.5 cm. long, laterally compressed, slightly divergent, 3-5-flowered; glumes about  $\frac{2}{3}$  as long as the spikelets, inferior 7-nerved, about 8 mm. long, barbate on the keel toward the acutish apex, superior 5-nerved, about 9 mm. long, barbate on the keel toward the acutish or minutely mucronulate apex; lemmas glabrous, abruptly narrowed to a subulate tip which is up to 4 mm. long and barbate dorsally, about 1-1.2 cm. long; paleas 2-keeled, with the keels barbate, shorter than the lemmas, truncate and slightly notched at the minutely ciliate apex.—NOVA SCOTIA: dry sandy beach of Bras d'Or Lake, Grand Narrows, Cape Breton, July 20, 1914, *Fernald & St. John* in *Plantae Exsiccatae Grayanae* (TYPE in Gray Herb.), also Grand Narrows, July 27, 1898, *John Macoun*, Herb. Geol. Surv. Can. no. 21,030, distributed as *A. occidentale*.

Allied to *A. Smithii* Rydb. from which it differs in the constricted and flexible nodes of the culm, the more involute blades which are

never more than scabrous above, the almost wholly glabrous rachis, the fewer-flowered and smaller spikelets and in the glumes which are acutish or short-mucronulate instead of acuminate. It also somewhat resembles *A. pungens* (Pers.) R. & S. from which it differs in the narrower, more involute and slightly shorter leaves, the less dense and not four-sided inflorescence and the fewer-flowered, somewhat less compressed spikelets.

BOSTON, MASSACHUSETTS.

## A NEW JUNCUS FROM CAPE COD.

M. L. FERNALD.

*JUNCUS pervetus*, n. sp., radicibus, rhizoma, culmis et foliis ut apud *J. Roemerianum*; culmis teretibus vel compressis rigidis rectis vel tortis 0.6–1 m. altis; inflorescentiis terminalibus vel pseudolateralibus supra compositis 2.5–10 cm. longis 2.5–6.5 cm. diametro, ramis rigide adscendentibus vel divergentibus; capitulis 10–30-floris subsphaericis segregatis; floribus circa 2 mm. longis interdum unisexualibus; sepalis petalisque subaequalibus pallide fuscis vel albescentibus oblongis obtusis membranaceo-marginatis, sepalis subcarinatis; staminibus 6 interdum abortivis, filamento antheram aequante; fructo exserto 3 mm. longo ovato-prismatico subulato-attenuato nitido stramineo vel rufescente, placentis non crassatis; seminibus 0.4–0.6 longis anguste obovatois apice obtuse mucronatis basi breviter albidocaudatis.

Roots, rhizome, culms and leaves as in *J. Roemerianus*: culms terete or compressed, rigid, erect or twisted, 0.6–1 m. high: inflorescences terminal or falsely lateral, much branching, 2.5–10 cm. long, 2.5–6.5 cm. in diameter; branches rigid, ascending or divergent: heads 10–30-flowered, subspherical, scattered: flowers about 2 mm. long, sometimes unisexual: sepals and petals subequal pale-fusca or whitish, oblong, obtuse, with membranaceous margins; sepals somewhat carinate: stamens 6, sometimes wanting; filaments equaling the anthers: fruit exserted, 3 mm. long, ovate-prismatic, subulate-attenuate, shining, stramineous or rufescent; the placentae not thickened: seeds 0.4–0.6 mm. long, narrowly obovoid, bluntly mucronate at apex, with a short white caudate appendage at base.—MASSACHUSETTS: brackish swale, Hyannis, August 29, 1909, *E. W. Sinnott* (distributed as *J. articulatus*, var. *obtusatus*); forming a dense swale for a few rods only at the peaty upper border of a brackish marsh, east side of Lewis Bay, Yarmouth, October 14, 1916, *M. L. Fernald & F. K. Butters*, no. 15,064 (TYPE), also in *Plantae Exsiccatae Grayanae*.



It is not improbable that Dr. Sinnott's station is identical with ours, the plant being excessively local and seen during three days of exploration only on one marsh, very near the Sinnott cottage in West Yarmouth, at the outskirts of the village of Hyannis.

In many characters resembling *J. Roemerianus* which, however, differs in the following essential points: more lax inflorescence with the heads only 2-6-flowered; perianth 3-3.5 mm. long, with acute sepals; filaments much shorter than the anthers; capsule only about equaling the perianth, obtuse and merely mucronate; placentae thickened; seed 0.75 mm. long, without caudate appendage at base.

*Juncus pervetus* is one of the many remarkable species of world-wide affinities which are being so frequently discovered on the coastal area of southern New England and southeastern British America. It belongs to a unique subgenus, *Junci thalassii* of Buchenau, characterized by rigid texture, usually bladeless lower sheaths, culm-like rigid pungent cauline leaf with continuous pith (not septate), and very branching usually rigid inflorescences bearing the flowers in heads. Thus, to compare these plants with familiar examples, they combine the habital characteristics of *J. balticus* or *J. effusus* with those of *J. militaris*. This unique subgenus has, besides the newly discovered *J. pervetus*, six species all of saline or subsaline habitats and with a disrupted range which indicates that they are remnants of an ancient group. *J. acutus* L. or one of its varieties occurs in the Atlantic and Mediterranean regions of Europe and northern Africa, the coasts and steppes of southwestern Asia, the Atlantic Islands (Madeira, Azores, etc., and Bermuda), Cape of Good Hope, the coast of California, southern Brazil, Uruguay, Argentina, Chile and the Islands of Juan Fernandez off the coast of Chile. *J. Cooperi* Engelm. is known only from saline regions of California and Nevada; *J. Roemerianus* only on the coast from Virginia to Texas; *J. austerus* Buchenau only from Chile; and *J. Kraussii* only from South Africa; while *J. maritimus* Lam. is widely but interruptedly dispersed: on the Atlantic and Mediterranean coasts of Europe, southwestern Asia and northeastern Africa, Cape of Good Hope, the Azores, Bermudas, Brazil, Australia, Tasmania and New Zealand, with its only station on the North American coast on Coney Island, New York.

It is thus evident that *J. pervetus* belongs in a subgenus of highly localized and presumably ancient species which were once widespread but are now reduced to scattered and often quite dissociated areas. That the plant is excessively local on Cape Cod will be evident from

the fact that, having detected the species in Dr. Sinnott's collection, now in the Herbarium of the New England Botanical Club, the writer and other members of the Club spent two days in June last, in the neighborhood of Hyannis with the plant especially in mind but without detecting it; later, in September, ten members of the Club watched without success for it during a two-day field-trip; on October 7 and 8, Messrs. Butters, St. John and the writer devoted two long days to a systematic search for it in many of the brackish swales in southern Barnstable and Yarmouth without success and on October 14, when the plant was finally found, it was in only one very limited station, a few rods long and perhaps a rod wide at the upper margin of a marsh, where the deeply creeping tough rootstocks extended on the one side into brackish or even saline marsh, on the other into acid peat. In this very restricted station, however, the plant was so prolific as quite to exclude all other species from the limited area.

We now know on the Atlantic coast of North America three of the seven species of the *Junci thalassii* (four if we include *J. acutus*, var. *Leopoldii* of Bermuda); two of them from only a single restricted station each: *J. maritimus* on Coney Island; *J. peruvianus* on Cape Cod. That other stations along the Atlantic seaboard should be expected is apparent and it is hoped that this extended notice may result in their discovery. In the past *J. acutus*, *J. maritimus* and *J. Roemerianus* have been credited to the coast of New Jersey, but the status of these plants in New Jersey is thus summarized by Dr. Witmer Stone.

"We can find no New Jersey specimens of *J. maritimus* or *J. roemerianus*, and their inclusion in the New Jersey flora seems to rest wholly upon a statement of Pursh (Fl. Amer. Sept. I. 235. 1814). He gives '*Juncus acutus* on the sandy seacoast New Jersey, &c.' In the first edition of Gray's Manual this record is quoted under *Juncus maritimus*, while in the fifth edition and earlier in Trans. St. Louis Acad. II. 439, 1866, Engelmann shows that the *J. maritimus* of American authors is really *J. roemerianus*, which he continues to cite from New Jersey. Prof. M. L. Fernald, who corroborates the above, also calls my attention to this statement by Englemann (Trans. St. Louis Acad. II. 490) — 'The New Jersey locality rests on the doubtful authority of Pursh; I have seen no specimens collected farther north than Wilmington, N. C.' As no one has found it in the State subsequently, I think we may safely expunge it from the list."<sup>1</sup>

<sup>1</sup> Stone, Pl. so. N. J. 330 (1912).

Now that we know on the south side of Cape Cod a unique relative of *Juncus maritimus* and *J. Roemerianus* it seems not impossible that Pursh really saw some member of this group on the New Jersey coast, although the station may now be obliterated. The stations of *J. maritimus* on Coney Island and of *J. pervetus* on Cape Cod are both so very limited that only a very mild degree of "improvement" would quickly obliterate the former from the flora of North America while the latter would as quickly become an extinct species.

GRAY HERBARIUM.

A FORM OF *SOLIDAGO SEMPERVIRENS* WITH WHITE RAYS. — Late in the season of 1915 there were brought to me two or three plants of the seaside golden rod the rays of which were creamy white, practically the same color as in *Solidago bicolor*. As these were gathered quite near the water at high tide, it seemed to me more than likely that the whiteness was the result of the spray dashing over the plants, although it is true that I did not find signs of it on the leaves.

This year (1916) I had an opportunity to examine the plants where they grow. They are at Isle au Haut, Maine. The particular colony where I have found the white-rayed form is composed of two hundred to two hundred and fifty plants, and the plants with the white rays grow mostly at one end of the patch, but they are scattered amongst the common yellow form in a way that precludes the possibility of spray having anything to do with the whiteness. Perhaps ten per cent of all the plants in this colony show the white rays.

This may be common elsewhere, but it has never happened to come to my notice. I should be glad to hear whether others have found the same form. — NATHANIEL T. KIDDER, Milton, Massachusetts.

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